



National Aeronautics and Space Administration



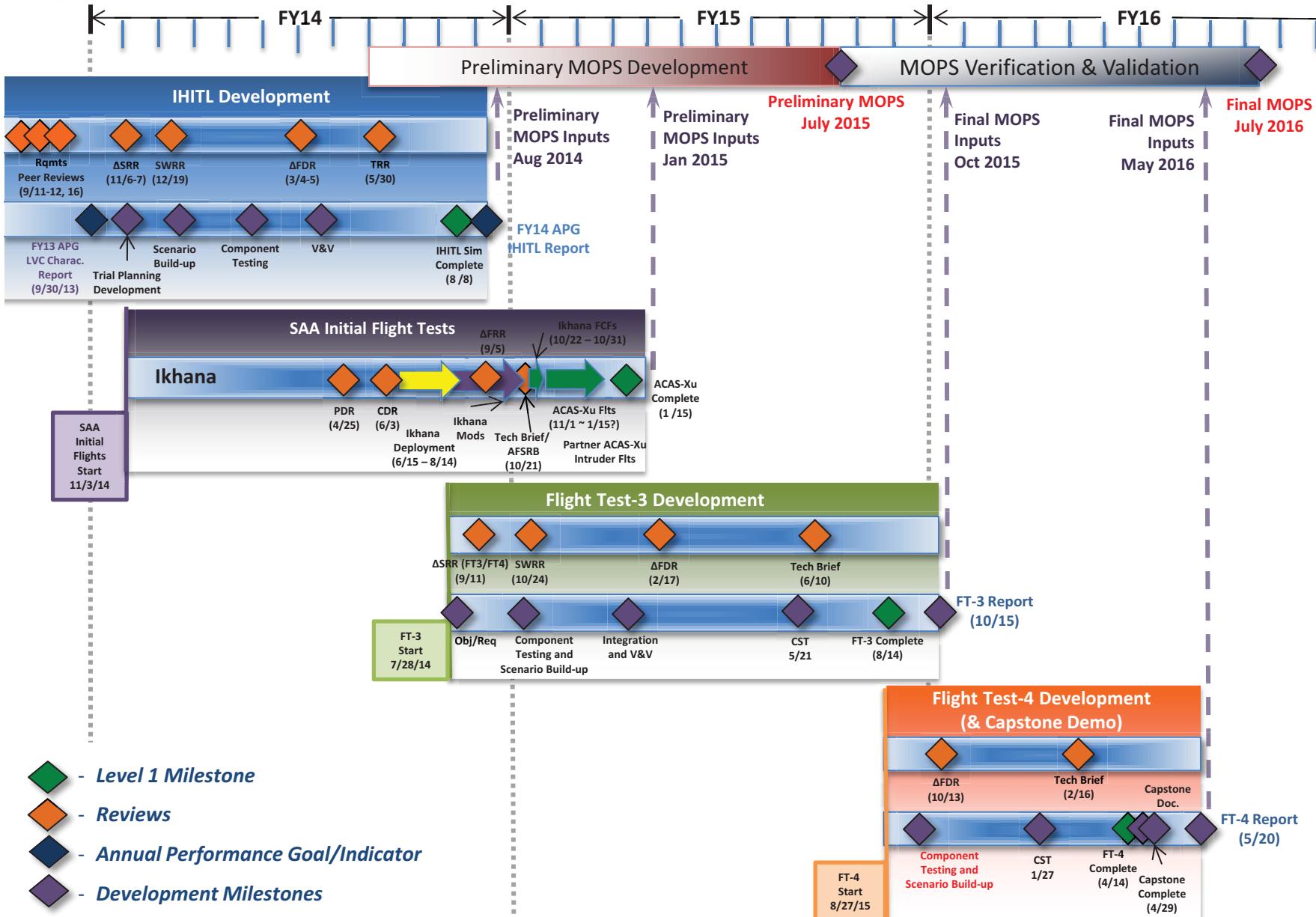
UAS Integration in the NAS Project Project Overview



RTCA SC-228 Plenary/DAA Working Group #5
May 19, 2014

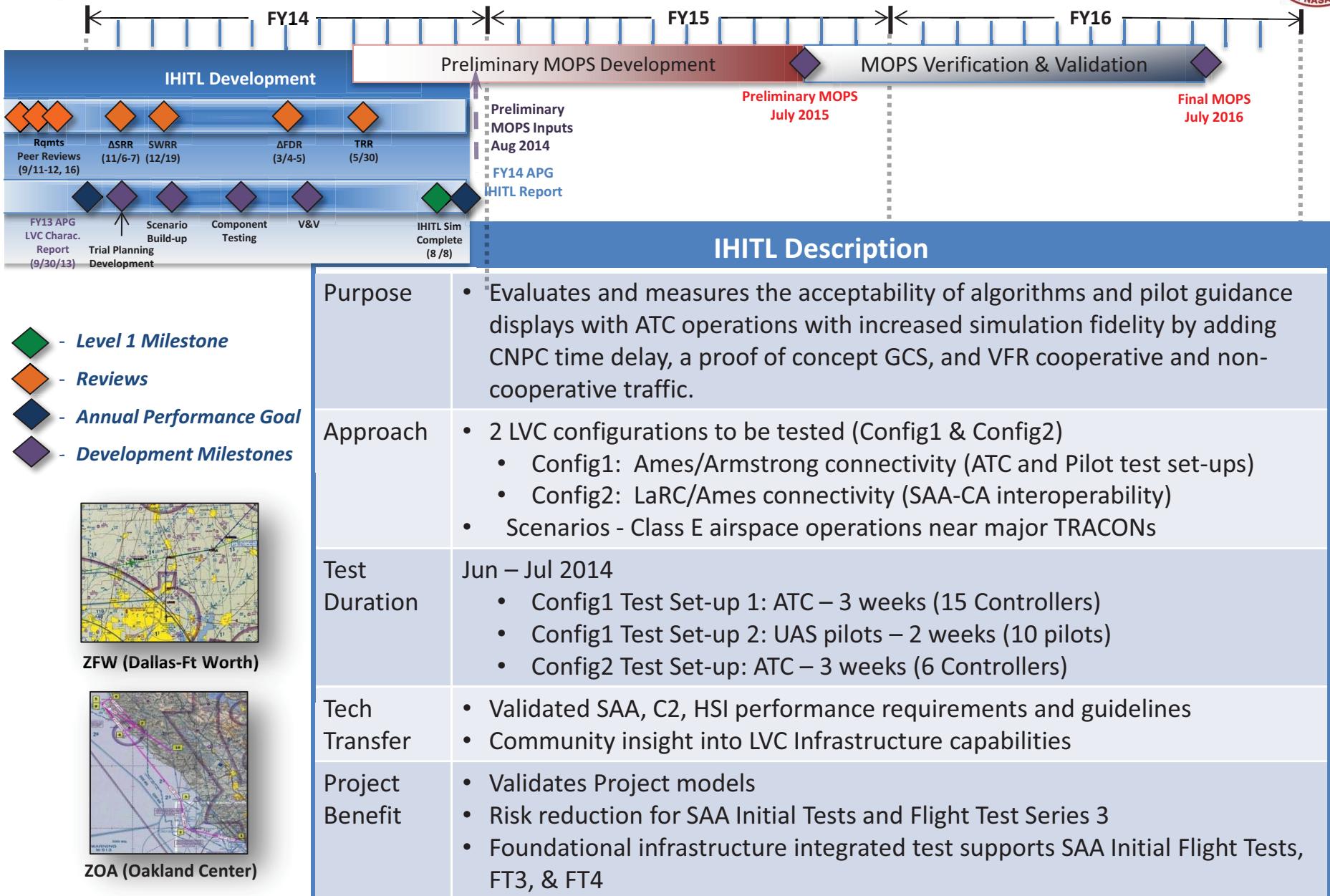


IT&E Integrated Test Flow





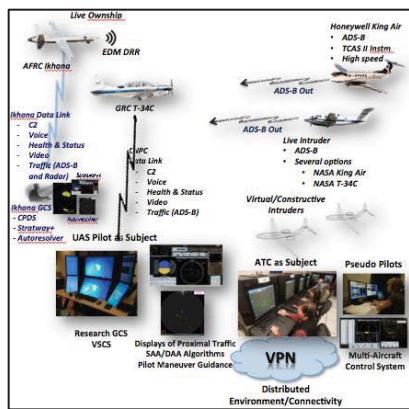
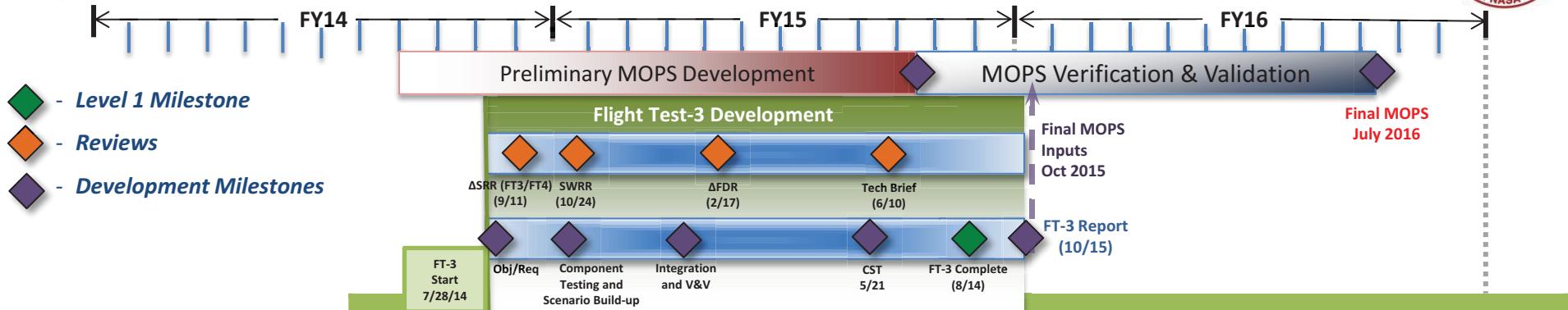
IT&E Integrated Test Flow IHITL





IT&E Integrated Test Flow

Flight Test Series 3



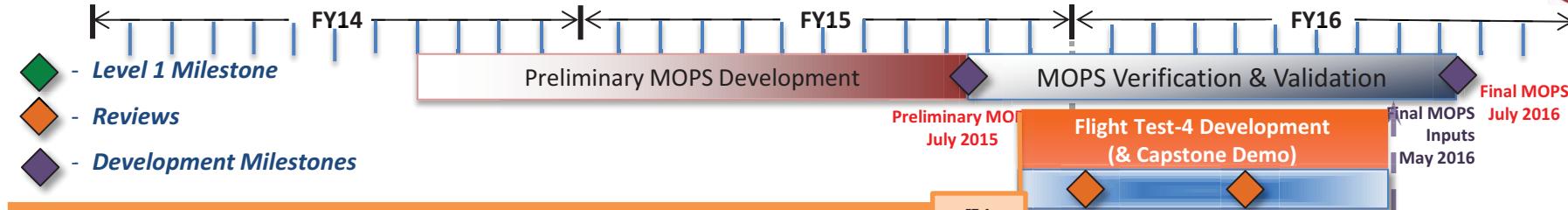
Flight Test Series 3 Infrastructure

Flight Test Series 3 Description	
Purpose	<ul style="list-style-type: none"> Flight test prototype SAA & C2 systems utilizing RGCS; conduct integrated flight test series to verify Preliminary DAA & C2 MOPS and validate sensor models Demonstrate system integration of surrogate UAS with CNPC, RGCS, and SS Algorithms
Approach	<ul style="list-style-type: none"> Increase complexity from IHITL through live aircraft incorporation and increased definition from MOPS Focus scenarios on testing of SAA (sensitivity, pilot workload, and maneuver negotiation), C2 (CNPC Mixed Traffic Flight Tests including Integrated SAA), and human factors (RGCS utilized to evaluate pilot information requirements)
Test Duration	Jun – Aug 2015 <ul style="list-style-type: none"> 36 flights/2 backups (3.5 hr flights)
Tech Transfer	<ul style="list-style-type: none"> First fully integrated flight test including both prototype systems for both DAA and C2 MOPS Initiates verifications of the preliminary MOPS
Project Benefit	<ul style="list-style-type: none"> Baseline FT4 System Architectures implemented Baseline flight test scenarios developed and validated



IT&E Integrated Test Flow

Flight Test Series 4



Flight Test Series 4 Description

Purpose	<ul style="list-style-type: none"> Contribute to validation of Final MOPS; flight test SAA, CNPC, and RGCS in more stressed environments Demonstrates systems integration and evaluation of the state of UAS concepts and supporting technologies Demonstrate final LVC-DE configuration
Approach	<p>Increased complexity from FT3</p> <ul style="list-style-type: none"> Challenging encounter geometries UAS pilot and ATC negotiation in complex/busy airspace Two aircraft with CNPC to assess link performance within the same spectrum Demonstrate CA/SS Interoperability, well clear compliance
Test Duration	<p>Feb - Apr 2016</p> <ul style="list-style-type: none"> 34 flights/2 backups (3.5 hr flights)
Tech Transfer	<ul style="list-style-type: none"> DAA and C2 system refinements flight tested Contributing to validation of final MOPS
Project Benefit	<ul style="list-style-type: none"> Baseline technologies for Capstone demonstration

